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Chronic Diseases and Translational Medicine 1 (2015) 55–58

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Coil closure of lumbar artery pseudoaneurysm: An unusual complication associated with anomalous left circumflex artery primary percutaneous coronary intervention

To the editor,

The presence of anomalous coronary arteries is observed in approximately 1% of patients undergoing coronary angiography (CAG).[1] In these patients, identification of the stenotic ostium and revascularization is difficult, particularly in the emergency setting of primary percutaneous coronary intervention (PCI). Among the congenital coronary anomalies, separate anomalous origin of all the coronary arteries from the right sinus of Valsalva is very uncommon.[2] Failure to identify the anomalous origin of coronary arteries can lead to in correct diagnosis and prolonged procedures, which can result in serious complications, especially in the setting of acute myocardial infarction.[3]

A male patient 60 years old presented with acute inferior and posterior wall myocardial infarction with post myocardial infarction (MI) angina. On evaluation his ECG revealed sinus rhythm, q II,III, aVF, Tall T in V1, V2. Two dimensional (2D) Echo showed regional wall motion abnormalities of the inferior & posterior walls, a moderate degree of MR, Gr II diastolic dysfunction, and an EF of 47% with good RV function. Biochemical values were within normal limits. TROP T was positive. In view of rest angina, the patient was taken for early revascularization. His coronary angiogram revealed dominant left system and left circumflex artery (LCX) with total occlusion, arising from the right sinus (Fig. 1). The LCX was engaged with an AL1 catheter (Amplatz guiding catheter). A hydrophilic coronary guide wire (Fielder xt) was used to cross the lesion. After crossing, it was dilated with a 1.5 × 15 mm semi compliant balloon. Inj Eptifibatide (GpIIbIIIa inhibitor) as a 9 ml IV bolus and 15 ml/hr as an infusion (dose adjusted according to body weight) were administered during the procedure. Post dilatation the vessel was stented with a 3.5 mm × 24 mm Sirolimus drug eluting stent (Fig. 2). Post procedure chest pain subsided for the patient but he complained of backache. The systolic blood pressure dropped to 90 mmHg and patient continued to complain of severe backache. A USG abdomen was done on an emergency basis which revealed a retroperitoneal collection. Intra venous Eptifibatide was discontinued and the patient was administered two units of packed cells. His backache subsided slightly. In view of the retroperitoneal collection, we considered it to be a hematoma, angiography was planned to delineate possible sources of the hemorrhage. Digital Subtraction Angiography (DSA) was done on a Universal Angiography System (Axiom Artis FA, Siemens, Erlangen, Germany), which showed a lumbar artery pseudoaneurysm arising from the right lumbar artery measuring 1.2 cm × 0.8 cm (Fig. 3). A spontaneous rupture of this lesion following the administration of GpIIb/IIIa inhibitor resulted in the retroperitoneal hematoma was considered. The feeding vessel of the pseudoaneurysm was engaged with a 4F 'cobra' curve catheter as the guide and a microcatheter (Progreat/2.7–2.9F/Terumo) was introduced coaxially. Microcoils (18-2.0-2 and 18-3.0-3Hilal/Cook,USA) were deployed through the microcatheter to obliterate flow across the pseudoaneurysm (Fig. 4). The procedure was uneventful and the hemodynamic status of the patient stabilized post procedure.

The primary angioplasty in anomalously arising LCX is rare and the incidences of such cases are few. The

Peer review under responsibility of Chinese Medical Association.

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http://dx.doi.org/10.1016/j.cdtm.2015.02.013

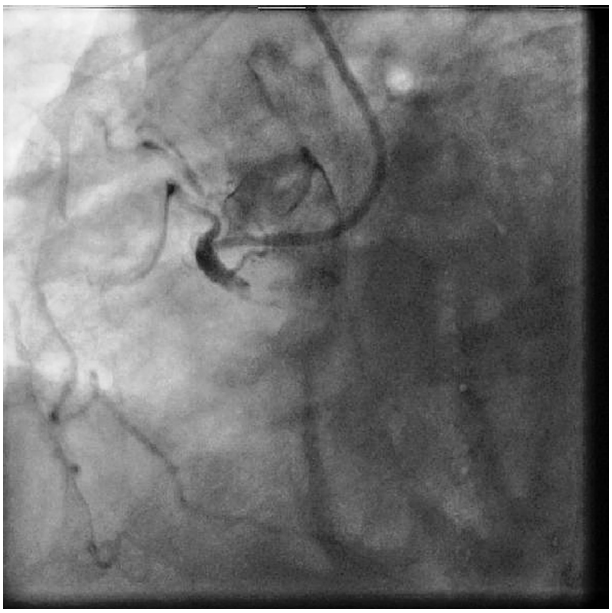

Fig. 1. Coronary angiogram showing anomalous origin of left circumflex artery from right sinus.

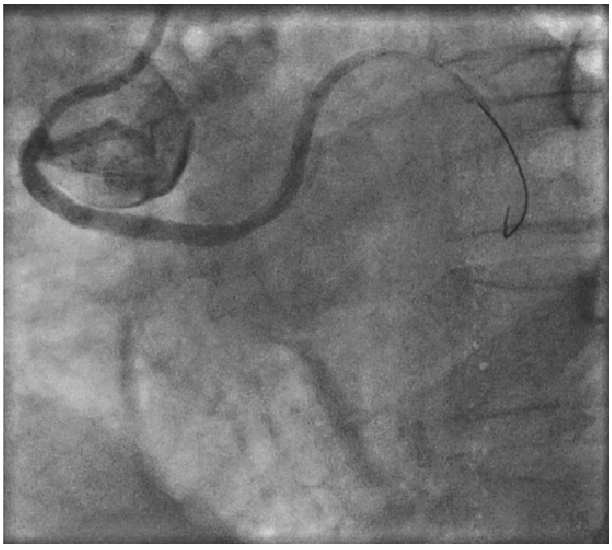

Fig. 2. Final result in LAO View showing TIMI III flow in anomalous left circumflex artery from right sinus after stenting with sirolimus drug eluting stent.

origin of the LCX from the right sinus of the Valsalva is a well-known anatomical variation.[4,5] Recognition and angiographic demonstration of the anomalous artery assumes a high priority. The clinical significance of the anomaly is obvious in patients undergoing PCI or cardiac surgery.[6] The first case series of PCI performed on such aberrant vessels was described in 1982.[7] During selective opacification of the left coronary artery, an avascular area in the posterior lateral left ventricular myocardium suggests that there is an anomalous origin of the LCX.[8] It has been reported that anomalous coronary arteries are prone to atherosclerosis.[3] The coronary blood flow would be disturbed in anomalous coronary arteries originating from the opposite side coronary sinus, which is located between the pulmonary trunk and the ascending aorta.[1] About half of the patients with anomalous LCA arising from the right coronary sinus die before the age of 20 years, and usually during or shortly after vigorous

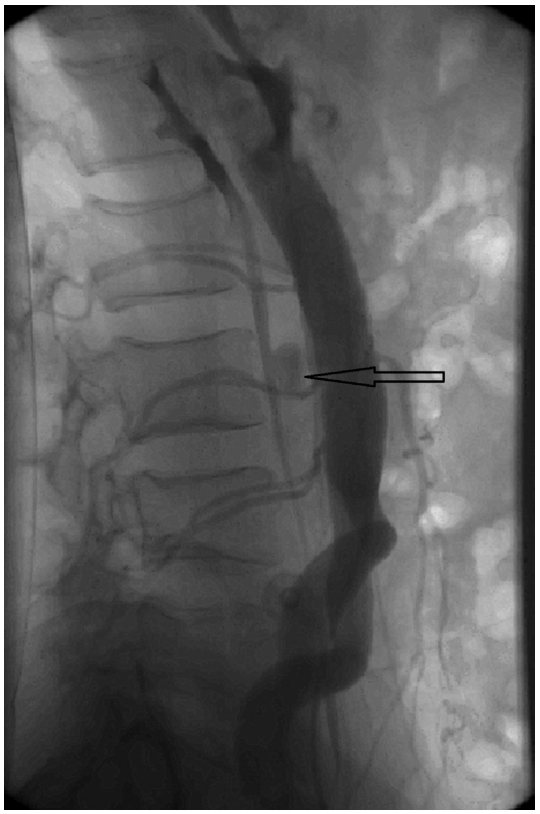

Fig. 3. Flush aortogram showing rt.(L3) Lumbar artery pseudoaneurysm measuring 1.2 cm × 0.8 cm (arrow).

exertion. However, our patient did not have any cardiac symptoms until the age 60 years. The cause of acute MI is atherosclerosis which is due to coronary risk factors like smoking, hypertension, and diabetes mellitus rather than an anomalous origin of coronary arteries. The origin of the artery appears anteriorly and inferiorly. An AL (amplatz guide) is well suited for cannulating this vessel and will do so selectively rather than entering the right coronary artery (RCA).

Another unique finding in this patient was the retroperitoneal hematoma which occurred due to a rupture of the lumbar artery pseudoaneurysm. The incidence of retroperitoneal hematoma is 0.15%–0.5%. Pseudoaneurysm of the lumbar artery is rare in the medical literature and is usually described after penetrating injuries. Among causes of bleeding unrelated to trauma are structural changes in the arterial wall or use of anticoagulant therapy.[9] It is also reported following blunt trauma, percutaneous renal interventions,[10,11] laparoscopic splenectomy,[12] or spontaneously after diagnostic cardiac catheterization.[13] The most likely mechanism is puncture of the femoral artery above the inguinal ligament and above the inferior epigastric artery, allowing the resultant bleeding to extend into the retroperitoneal space. In our case the cause for retroperitoneal hematoma was spontaneous rupture of the lumbar artery pseudoaneurysm which was initially managed conservatively and on the next day closed with percutaneous

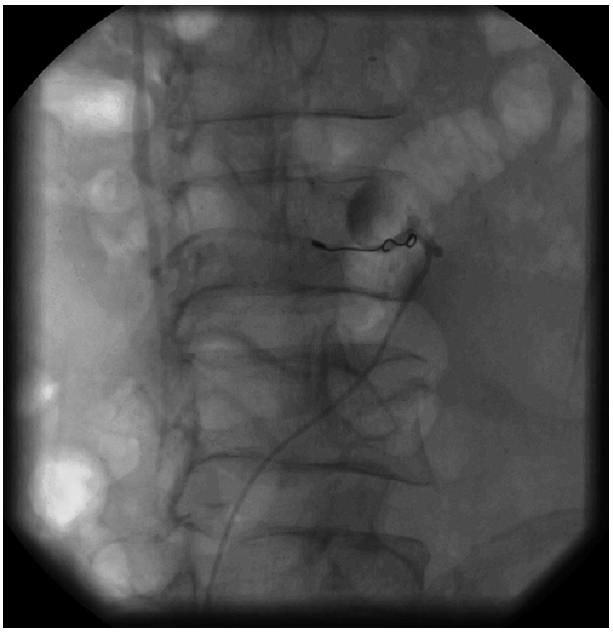

Fig. 4. Lumbar artery occluded with microcoil embolization.

intervention. Surgical treatment of lumbar artery pseudoaneurysm is difficult because of the anatomic location of the artery and difficulty in controlling intraoperative bleeding.[14,15] Intraarterial embolization is a more appropriate treatment approach in these patients, since it is minimally invasive, does not require general anesthesia, leads to minimal blood loss, and has a higher success rate.[10,13] Closure of the pseudoaneurysm must be done as there is a chance of future bleeding as the patient will require dual antiplatelet agents.

Consent

Informed consent of the patient was taken at the time of discharge for publication of the case.

Conflicts of interest

I and my coauthors have not received any kind of financial assistance from any outsource.

Acknowledgment

I am thankful to Dr. Ramchandra Barik, Assistant Professor of Cardiology, for his kind help for guiding me in the preparation of the manuscript.

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4 December 2014

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